Remarks

After the Office Action dated August 4, 2008 (hereinafter: "the Office Action"), claims 1-31 are currently pending and stand rejected. Each of claims 1, 19, and 20 have been amended to recite explicitly a feature of the claim that was previously implicit, as to progress the prosecution of this application. Reconsideration of the above-identified application in view of these remarks is respectfully requested.

I.   Rejections of Claims 1-5, 11, 12, and 17-19 under 35 U.S.C. §103(a)

Claims 1-5, 11, 12, and 17-19 have been rejected as unpatentable over U.S. Patent No. 6,801,662 to Owechko et al. (hereinafter: "Owechko"), in view of U.S. Patent Publication No. 2004/0153229 to Gokturk et al. (hereinafter, "Gokturk"). It is respectfully submitted that claims 1-5, 11, 12, and 17-19 define over the cited art.

Applicants have argued that Owechko and Gokturk, taken alone or in combination, fail to teach or suggest a candidate matcher that predicts the current position of a given tracked head candidate from the previous position and motion of the head to provide a projected head candidate position as recited in claim 1. The Examiner responds with a citation from Gorturk, ¶0138, discussing the use of occupant motion in the physical event layer of the application. It is respectfully submitted, however, that the head tracking function of Gorturk occurs in the tracking layer, and to a lesser extent, the frame rate layer, as is made clear in ¶0141, not the physical event layer. The cited portion of Gorturk is simply not applicable to the head tracking methodology of Gorturk. It is thus respectfully submitted that Gorturk does not teach or suggest a candidate matcher that predicts the current position of a

given tracked head candidate from the previous position and motion of the head to provide a projected head candidate position.

Applicants have further argued that Gorturk does not teach the selection of a subset of a plurality of possible new head candidates according to their distance from the projected head candidate position as recited in claims 1 and 19. The Examiner responds that a subset can include the entirety of the entire set. Applicants acknowledge that the mathematical definition of a subset can include an entire set, and while it is believed that a system that always accepts all of the candidates does not read on the recited selection step, Applicants have amended claims 1, 19, and 20 to specify the selection of a proper subset of the plurality of possible head candidates. Support for this amendment, specifically the proposition that the subset can comprise less than all of the plurality of candidates, can be found in the specification at least in the paragraph beginning on line 1 of page 12.

The Examiner's citation on the depth-based ellipse fitting as providing a teaching of the selection of a subset of the at least one of the plurality of possible new head candidates according to their distance from the projected head candidate position by a candidate matcher is not understood. *See* the Office Action, pg. 4. As has been argued previous, if the system is still matching pixels to ellipses, there are no identified head candidates to select among. At best, this step of the methodology is analogous to the function of the recited image analyzer. If the Examiner is proposing that one of skill in the art would be led to utilize the depth-based pixel grouping of Gorturk can be utilized with the Owechko system to select among existing head candidates identified in Owechko, an explanation of how such a

system would operate and what advantages of this pixel grouping process would provide an advantage is respectfully requested.

Further, Gorturk explicitly refutes the Examiner's apparent interpretation. The Examiner cites the head detection algorithm of step 1540 as providing the recited selection function. In paragraph 0154, Gorturk states that "[t]he difference of the head tracking as opposed to the head detection is that, there is an initial estimate of the head shape and location in the first one *but not in the latter.*" (emphasis added). If the head detection of step 1540 does not include an initial estimate of the head shape and location, it cannot represent the recited selection of a subset of the at least one of the plurality of possible new head candidates *according to their distance from the projected head candidate position* by a candidate matcher as claimed by the Examiner.

Applicants also note that the portion of Gorturk cited by the Examiner as providing the final function of the recited candidate matcher in claims 1 and 19 is a determination that occurs either at an interval far too slow for effective use in an occupant protection system (*e.g.,* ever few seconds) or when the head tracking has failed. It is thus respectfully questioned how this could represent evaluating the similarity of each member of the selected subset to the tracked candidate to determine if a new head candidate within the selected subset represents a current position of the tracked head candidate, when this selection would take place several times a second to provide a functional tracking system, and the redetection process in Gorturk would occur every few seconds. It is thus respectfully submitted that Owechko in view of Gorturk does not teach or suggest every element of claims 1

and 19, and that the Examiner has thus not provided a *prima facie* case of the obviousness of these claims.

The Examiner also states that claims 1 and 19 do not recite "a candidate matcher that predicts the current position of a prior head candidate and selects head candidates according to their distance from the predicted location," and that Applicants are arguing material in the specification that is not present in the claim. Other than the use of the word "prior", this appears to be exactly what claims 1 and 19 recite. To the extent that the Examiner objects to the use of the word "prior", from the claims we know that the head candidate is a "tracked" head candidate and that location information representing that candidate is stored prior to the prediction of the location of the candidate, as evidenced by the use of that information during the prediction. It is thus respectfully submitted that the claim supports a reference to a "prior" head candidate, as by the terms of the claim the "tracked head candidate" must be a candidate for which some sort of location information is stored prior to the attempt to predict a current location. Applicants thus stand by the arguments presented.

Each of claims 2-5, 11, 12, 17, and 18 depend, directly or indirectly, from claim 1, and are allowable for at least the same reasons. It is thus submitted that each of claims 1-5, 11, 12, and 17-10 define over the cited art, and the withdrawal of the rejection of these claims is respectfully requested. .

IV.   Rejection of Claims 6-10 under 35 U.S.C. §103(a)

Claims 6-10 have been rejected as unpatentable over Owechko and Gokturk in further view of U.S. Patent Publication No. 2003/0235341 to Gokturk et al.

(hereinafter, "Gokturk03"). It is respectfully submitted that claims 6-10 define over the cited art.

V.   Rejection of Claim 13 under 35 U.S.C. §103(a)

Claim 13 has been rejected as unpatentable over Owechko, Gokturk, and Gokturk03 in further view of U.S. Patent 5,973,732 to Guthrie. (hereinafter, "Guthrie"). Claim 13 depends indirectly from claim 1 and is allowable for at least the same reasons. Guthrie does not remedy the deficiencies of Owechko, Gokturk, and Gokturk03 as applied to claim 1. It is respectfully submitted that claim 13 defines over the cited art, and the withdrawal of the rejection of claim 13 is respectfully requested.

VI.   Rejection of Claims 14-16 under 35 U.S.C. §103(a)

Claims 14-16 have been rejected as unpatentable over Owechko, Gokturk, Gokturk03, and Guthrie in further view of U.S. Patent 7,134,688 to Takagi et al. (hereinafter, "Takagi"). Each of claims 14-16 depends indirectly from claim 1 and is allowable for at least the same reasons. Takagi does not remedy the deficiencies of Owechko, Gokturk, Guthrie, and Gokturk03 as applied to claim 1. It is respectfully submitted that claims 14-16 define over the cited art, and the withdrawal of the rejection of claims 14-16 is respectfully requested.

VII.   Rejection of Claims 20-30, 32 and 33 under 35 U.S.C. §103(a)

Claims 20-30 have been rejected as unpatentable over Owechko and Gokturk in further view of Gokturk03. It is respectfully submitted that claims 20-30 define over the cited art.

Applicants have argued that there is no teaching or suggesting of taking into account the previous motion of the head whatsoever in searching for the new head candidate. The Examiner responds with a citation from Gorturk, ¶0138, discussing the use of occupant motion in the physical event layer of the application. As applicants have pointed out, the head tracking function of Gorturk occurs in the tracking layer and the frame rate layer, not the physical event layer, and thus the motion data is not used in the prediction of the head candidate position. Gorturk03 does not appear to remedy this deficiency. Accordingly, claims 20 and 30 define over the cited art for at least the failure of Owechko in view of Gorturk and Gorturk03 to teach or suggest predicting the current location of the previous head candidate according to its previous location and motion.

Each of claims 21-29 depend, directly or indirectly, from one of claims 20 and 30 and are allowable for at least the same reasons. It is thus submitted that claims 20-30 define over the cited art, and the withdrawal of this rejection is respectfully requested.

VIII.   Rejection of Claim 31 under 35 U.S.C. §103(a)

Claim 31 has been rejected as unpatentable over Owechko, Gokturk, and Gokturk03 in further view of Guthrie. Claim 31 depends from claim 30 and is allowable for at least the reasons given in the discussion of claim 30. Guthrie does not remedy the various deficiencies of Owechko, Gokturk, and Gokturk03 as applied to claim 30. It is thus submitted that claim 31 defines over the cited art, and the withdrawal of this rejection is respectfully requested.

IX.   Conclusion

In light of the amendment and remarks above, it is respectfully submitted that claims 1-31 define over the cited art. The withdrawal of the rejections of these claims and the passage of the application to issue is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this matter to our Deposit Account No. 20-0090.

Respectfully submitted,

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